

BMJ Open Parental perceptions of school-based influenza immunisation in Ontario, Canada: a qualitative study

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ABSTRACT

Objective: To understand the perspectives of Ontario parents regarding the advantages and disadvantages of adding influenza immunisation to the currently existing Ontario school-based immunisation programmes.

Design: Descriptive qualitative study.

Participants: Parents of school-age children in Ontario, Canada, who were recruited using a variety of electronic strategies (social media, emails and media releases), and identified as eligible (Ontario resident, parent of one or more school-age children, able to read/write English) on the basis of a screening questionnaire. We used stratified purposeful sampling to obtain maximum variation in two groups: parents who had ever immunised at least one child against influenza or who had never done so. We conducted focus groups (teleconference or internet forum) and individual interviews to collect data. Thematic analysis was used to analyse the data.

Setting: Ontario, Canada.

Results: Of the 55 participants, 16 took part in four teleconference focus groups, 35 in 6 internet forum focus groups and four in individual interviews conducted between October 2012 and February 2013. Participants who stated that a school-based influenza immunisation programme would be worthwhile for their child valued its convenience and its potential to reduce influenza transmission without interfering with the family routine. However, most thought that for a programme to be acceptable, it would need to be well designed and voluntary, with adequate parental control and transparent communication between the key stakeholder groups of public health, schools and parents.

Conclusions: These results will benefit decision-makers in the public health and education sectors as they consider the advantages and disadvantages of immunising children in schools as part of a system-wide influenza prevention approach. Further research is needed to assess the perceptions of school board and public health stakeholders.

INTRODUCTION

Children are important drivers of influenza transmission.^{1–5} Immunising school-age children may provide direct benefits to the children as

Strengths and limitations of this study

- Several qualitative studies from the USA have identified issues (from the perspective of parents) that are relevant to the design and implementation of programmes to deliver immunisations (including influenza immunisation) to school-age children at school.
- However, data from settings in which healthcare and influenza immunisations are universally publicly funded, and well-established programmes for delivering vaccines other than influenza vaccine at school have been lacking.
- The issues raised by parents in our study were similar to those found elsewhere, including parents in the USA.
- Our data provide guidance for programme planners to develop programmes that are acceptable to parents for delivering influenza vaccines in schools.

well as indirect benefits to high-risk groups.^{6–11} Canada recommends vaccination of children aged 6–59 months and individuals ≥ 65 years, and also encourages vaccination of all healthy persons aged 5–64 years.¹² The province of Ontario has provided free influenza vaccines for all residents aged 6 months or older since 2000. However, coverage during the 2006–2007 influenza season was only 31% among children aged 12–19 years, 28% among healthy children aged 2–11 years and 37% among children aged 2–11 years with chronic health conditions.^{13 14} Barriers to access are often cited as reasons for under-immunisation.¹⁵

In Canada all provinces and territories vaccinate children at school, although there is variance in the vaccines administered using this strategy.¹⁶ Ontario (population 13.4 million in 2012) is the only Canadian province to date where school-based influenza

immunisation (SBII) is known to have been implemented, and it has been associated with an approximately 10% greater vaccine coverage in school-age children (39% vs 30% for children aged 12–19 years, 36% vs 24% for children aged 4–11 years), and a corresponding 19–24% reduction in influenza-associated physician office visits.¹⁴ SBII is a strategy to increase influenza vaccine coverage in children particularly ‘where background rates are likely to be very low and improvements in coverage are needed’.¹⁷ SBII may also have the potential to reduce disparities in uptake that might exist, based on the recent Alberta experience with school delivery of adolescent-targeted human papillomavirus (HPV) vaccine delivery.¹⁸ However, the decision to implement SBII is at the discretion of each of Ontario’s 36 public health units (PHUs), and the number of PHUs offering SBII was only 4 in 2010.¹⁴

Key stakeholders for the development and implementation of any school-based immunisation programme include parents and guardians, the education sector (eg, school administrators) and the health sector (eg, public health). We conducted a qualitative study to examine and understand parents’ perceptions of the advantages and disadvantages of SBII, as well as the programmatic characteristics that would contribute to the development of robust SBII programmes that are acceptable to parents in Ontario, Canada.

METHODS

We conducted a descriptive qualitative study using focus groups (FG) as our primary means of data collection,¹⁹ using key informant interviews to confirm findings with rural participants. Given Ontario’s large geographical area, we chose teleconferences (maximum duration of 1 h) and internet forums (asynchronous participation, approximately 15 min/day for 5 days) to facilitate participation by parents from across the province. Teleconferences and internet forums have been found to be as successful as face-to-face sessions for FGs.^{20 21}

Recruitment

Between October 2012 and February 2013, we used purposeful sampling to recruit parents of school-age children living in Ontario using social media, deal forum websites, online classified ads, conventional mass media and email lists.²² Participants were eligible if they: (1) lived in Ontario; (2) had at least one child enrolled in school (kindergarten to grade 12); (3) were mostly or jointly responsible for making health decisions for their child; and (4) spoke and wrote in English. If eligible, participants were then asked questions about their demographic characteristics and to indicate their preference for a teleconference or an internet forum FG. For each FG, we invited at least twice the number of individuals to participate as needed in anticipation that many of those invited would not participate, and we offered them two or three time slots as options. We conducted the teleconference FGs at the time

when the maximum number of persons were available. Individuals who preferred internet forums were provided with forum start and end dates, and asked to create an online account prior to the beginning of the first forum. We conducted recruitment in three rounds. Round 1 occurred in November 2012, Round 2 in December 2012 and Round 3 in February 2013. In Round 1, we offered a \$5 Amazon.ca electronic gift certificate to eligible participants completing both parts of the web-based eligibility questionnaire. No incentive was offered in the subsequent two rounds of recruitment. After closing recruitment in each round, we stratified participants into two heterogeneous groups to ensure within group homogeneity: (1) *Ever group*: parents who had ever immunised at least one child against influenza; and (2) *Never group*: parents who had never immunised any of their children against influenza. To ensure maximum variation in each group on other attributes, we invited individuals based on additional criteria: single parent status, geographic location (urban vs rural), gender, ethnicity and age. The last round targeted parents from rural areas. We defined rural residents as being those who had a zero in the second position of their six-digit postal code, indicating residence in an area that is not accessible by letter carriers.²³

Study process

A trained facilitator (LC) moderated all FGs, with other team members (DM, JAP, SQ, HR) attending selected sessions. Researchers LC, DM, JAP and SQ had experience and/or training in qualitative methods. All members of the research team except JCK were women and all had public health experience as well as a vested interest in promoting immunisation within the public domain. None of the researchers had relationships with any of the participants prior to the study. All participants were provided with a semistructured interview guide in advance. This pilot-tested guide included a brief description of the study purpose, participant instructions and the 11 core questions. During the FGs, the participants were encouraged to share their opinions, and to build on each other’s thoughts and ideas about SBII. Repeat interviews were not conducted. One individual withdrew from an FG after being deemed ineligible to participate based on disclosures made at the start of the FG. Following the FGs, we completed a round of individual interviews with rural parents as participation was low among this group. Teleconference FGs and telephone interviews were digitally recorded and transcribed verbatim by a qualified transcriptionist. Transcripts were not returned to the participants for comment. Field notes were written following each FG and interview including information about the process and personal observations. Internet forum and teleconference data were imported into NVivo 10 for analysis.

Analysis

Following each round of data collection, four research team members (LC, JAP, DM, SQ) individually coded

the data using the process of thematic analysis.^{19 24 25} Each person read all transcripts to generate an initial set of codes. The initial codes were then collated into potential themes, where all data were gathered relevant to each theme. The themes were then reviewed to ensure that they reflected the coded extracts as well as the entire data set. Through ongoing analysis, the themes were refined and linkages between them were identified. Team members met regularly to review the emergent themes and reach consensus. As new themes were still arising at the end of the first round of FGs, recruitment was reopened and a second round of FGs continued until saturation was reached. Following analysis, the themes were compared with the existing literature to determine congruency of the findings.

Ethics and role of the funding source

Participants gave informed consent prior to taking part in the study; the consenting process included information about the researchers and the purpose and rationale of the study. The study was funded by the Canadian Institutes of Health Research, grant number PIR 124309. The funding source had no role in the design and conduct of the study;

collection, management, analysis and interpretation of the data; and preparation, review or approval of the manuscript.

RESULTS

Between November 2012 and February 2013, we conducted 10 FGs and four key informant interviews over three rounds. Fifty-five people participated. Round 1 comprised one teleconference (6 parents) and two internet forums (15 parents) FGs. Round 2 entailed three teleconference (10 parents) and four internet forums (20 parents) FGs. Round 3 involved four key informant interviews (four parents, all rural). Of the 55 participants, 41 (75%) were women, 26 (47%) were 40 years or older, 34 (67%) had a university degree, 25 (45%) had more than one child, 50 (91%) were from urban areas, 10 (18%) identified themselves as single parents and 30 (55%) had ever had a child immunised against influenza (table 1).

Themes

Two major themes describing Ontario parents' perceptions of the advantages and disadvantages of influenza

Table 1 Description of participants

Characteristics	Round 1 n=21 (%)	Round 2 n=30 (%)	Round 3 n=4 (%)	Total N=55 (%)
Influenza vaccination status				
Ever had a child vaccinated against influenza	12 (57)	14 (47)	4 (100)	30 (55)
Never had a child vaccinated against influenza	9 (43)	16 (53)	0 (0)	25 (45)
Urban vs rural residence				
Urban	20 (95)	30 (100)	0 (0)	50 (91)
Rural	1 (5)	0 (0)	4 (100)	5 (9)
Single (lone) parent status				
Single parent	3 (14)	7 (23)	0 (0)	10 (18)
Other	17 (81)	23 (77)	4 (100)	44 (80)
Prefer not to answer	1 (5)	0 (0)	0 (0)	1 (2)
Sex				
Female	11 (52)	26 (87)	4 (100)	41 (75)
Male	10 (48)	4 (13)	0 (0)	14 (25)
Number of children				
1	13 (62)	15 (50)	2 (50)	30 (55)
2	6 (29)	9 (30)	1 (25)	16 (29)
3 or more	2 (9)	6 (20)	1 (25)	9 (16)
Number and proportion of parents with at least one child in level of school				
Kindergarten	8 (38)	13 (43)	0 (0)	21 (38)
Elementary school (grades 1–6)	7 (33)	18 (60)	3 (75)	28 (51)
Middle school (grades 7–8)	3 (14)	5 (17)	1 (25)	9 (16)
High school (grades 9–12)	6 (29)	4 (13)	0 (0)	10 (18)
Age range (years)				
20–29	4 (19)	4 (13)	0 (0)	8 (16)
30–39	10 (48)	10 (33)	1 (25)	21 (38)
40 or older	7 (33)	16 (53)	3 (75)	26 (47)
Education				
High school	2 (10)	2 (7)	0 (0)	4 (8)
Some postsecondary or college diploma	3 (14)	10 (33)	3 (75)	16 (29)
University degree	16 (76)	18 (60)	0 (0)	34 (67)
Other/no answer	0 (0)	0 (0)	1 (25)	1 (2)

immunisation in schools were identified: the effects of SBII at each stakeholder level and recommendations for an ideal programme (table 2). These themes mapped to the coding tree created during analysis as they had been derived directly from the data.

Theme 1: Perceived effects at the individual and system level

Impact on children and their families

Pressure to immunise. Parents expressed support and concern for the fact that implementing SBII would increase pressure to have children immunised, and would force parents to make a decision. Those supportive of SBII thought that this added pressure could be beneficial, resulting in increased vaccine uptake in children.

... there are people who don't immunize their children for a variety of things, but influenza in particular...so I think that having it [influenza immunization] in school would put some pressure on some of those people to immunize their children...that could be seen as an advantage because I think that it would increase uptake... (P27)

However, others thought that the decision to vaccinate one's child against influenza should be personal, and the implementation of SBII may lead to inappropriate external influence on the decision-making process. This was especially true for those who expressed overall

negative views about vaccination, or were uncertain about the merits of seasonal influenza vaccine.

I think the one disadvantage that I could think of is because it's part of the school-based program, I think some parents who may not want to use it, may feel pressured, because it is offered at school, and they may feel pressured to use it. (P23)

Integration into family life/accessible. Most parents agreed that SBII would be time saving and more convenient for families and less disruptive to the family routine than seeking immunisation at conventional healthcare locations. This issue was mentioned repeatedly by parents from rural areas, for whom influenza immunisation often required considerable travel and time due to limited access to immunisation providers and a lack of public transit.

If we miss that (clinic) then we must travel to one of the clinics in Ottawa (a 90-110 minute round trip plus time waiting in clinic) or make arrangements with our doctor. (However) in the past our GP has only been able to vaccinate the family once the clinics have finished, which is usually well past the optimal period for preventing infection. (P46)

...If you don't have a primary care physician...you can't get it (flu shot) done at a walk-in clinic. (P54)

Table 2 Themes arising from the data

Main theme	Subthemes (level 2 themes) within main theme	Subthemes within level 2 themes
Perceived effects at the individual and system level	Impact on children and their families	Pressure to immunise Integration into family life/accessible Immunisation of non-student populations
	Impact on healthcare system	Vaccine uptake Cost effectiveness of SBII programme Opportunity for transmission Burden on non-SBII settings
	Impact on school system	
Considerations and recommendations for a successful SBII programme	Parental control over child's health Programme coordination, implementation and management Shared stakeholder responsibility Educating parents about influenza and influenza vaccines The needs of the child	

SBII, school-based influenza immunisation.

Immunisation of non-student populations: A few parents expressed concern that SBII may affect adult immunisation coverage. Since the practice of influenza immunisation was commonly carried out as a family and often for the benefit of the children, they thought that parents may be less inclined to get immunised themselves if their children were immunised at school.

Impact on healthcare system

Vaccine uptake: Many parents thought that if SBII was well developed, timed appropriately during the school year and safely implemented, it had the potential to increase influenza immunisation coverage. These parents anticipated a positive impact on the healthcare system, with increased vaccine uptake leading to decreased disease spread and healthcare utilisation.

Cost effectiveness of SBII programme: Some parents commented on the need to understand the costs of SBII before assessing its value. Several thought that if the programme increased immunisation coverage, the community-wide benefit of fewer cases of influenza would justify the increased programme costs.

I think the long term health care costs in reducing the risk of a flu epidemic, would be less than the short term costs of providing the vaccination free of charge. (P44)

However, others were unsure about who would be expected to fund the programme. These participants were concerned about additional financial costs to schools and the healthcare system, and thought that they needed more information before supporting SBII.

Perhaps the teachers would have to do more work?... Where does the budget for this come from? Would it affect school budgets at all? (P46)

Opportunity for transmission: A few parents mentioned that SBII allowed their children to get vaccinated in a setting where individuals would tend to be relatively healthy, in contrast to the perceived risk of exposure to ill persons while waiting in physician offices or in line-ups for public health mass vaccination clinics. School clinics were thus viewed as being comparatively healthy environments, decreasing opportunities for transmission of influenza to children and their families.

Burden on non-SBII settings: A small number of parents thought that introducing SBII could ease strain on the healthcare system. These parents associated currently structured influenza immunisation programmes with long line-ups in mass vaccination clinics, and thought SBII could potentially decrease the burden influenza immunisation places on family doctors and public health clinics.

Impact on school system

Parents had conflicting views on the appropriateness of using schools to deliver a healthcare programme like SBII. Some thought that schools were a suitable and

convenient location to vaccinate children. Others were uncertain about the roles and responsibilities of schools compared with those of local public health. If schools were actively involved in SBII implementation, there was concern as to whether they were well equipped to coordinate the programme successfully, whether this might interfere with education and whether school-based immunisations would be recorded properly, with the mechanisms in place to track and transfer the data as needed.

My biggest concern...is the logistics of it...Who is monitoring and how are we going to do that in terms of the schedules? And beyond the schedule, how that information is going to be passed on? (P2)

There was also some apprehension as to whether SBII programme implementation was an achievable goal given the amount of coordination that would be required from the various stakeholders. A few parents were concerned whether every aspect of the programme would be considered, beyond the logistics, to reflect the best interests of children.

...I'm worried about public health lining up hundreds of kids to be immunized and only having time for the logistics of getting that done and not having the time to care for emotional states. (P51)

Theme 2: Considerations and recommendations for a successful SBII programme

Although there were parents who were firmly against seasonal influenza vaccines for their children, many expressed that there could be value to an SBII programme, but identified several issues that would need to be addressed before they would feel comfortable using the programme.

Parental control over child's health: All parents agreed that the programme should be 100% voluntary but acknowledged that opinions were mixed on this. However, they said as long as there was a choice, they would not oppose it.

As long as these programs are optional, I think they provide a good service. Parents decide what is best for their children and there should be no pressure to participate. (P48)

Many parents thought the use of rewards for children being immunised (eg, stickers, candies) would be positive and would help increase the comfort level of the child being immunised. However, in one FG, a couple of parents expressed concerns that giving rewards only to immunised children would potentially stigmatise those who did not receive the vaccine.

Programme coordination, implementation and management: Several parents stressed that the timing of the programme was important. Planning the annual clinics at the same time of the year, in the right period for disease

prevention and adding clinic dates to school calendars at the beginning of the year would be essential.

In the absence of experience with SBII, and in many cases, any school-based immunisation programme, some parents were unaware that nurses from the local public health agency deliver immunisation programmes (eg, for HPV and meningococcal vaccines) in schools. These parents expressed concerns about who would be giving the vaccine: Would they be professionals? Would the location and process be hygienic? Others raised concerns about how side effects or allergic reactions would be managed.

As long as it was being done in a safe clean environment and administered by trained professionals, then nothing would stop me from having my children given a flu shot at school. (P51)

...my biggest fear has always been the reaction to the vaccine, whether or not they would get the right amount of attention if there was a negative reaction. (P11)

Shared stakeholder responsibility: The majority of parents spoke of the need for effective communication between all stakeholders (school/parents/public health), to ensure everyone is well informed with appropriate information to make decisions. Keeping lines of communication open, and being sensitive to the needs of the different parent groups (such as unique cultural or economic groups or those with differing opinions about influenza immunisation) was considered essential. Parents also provided suggestions about effective communication channels.

...having an information session for new parents every year...would be wonderful. (P26)

Educating parents about influenza and influenza vaccines: Participants thought that the ideal SBII programme would include education for parents about influenza illness and influenza vaccine. Some parents perceived that influenza was not a serious disease. Others thought they needed more information about vaccine effectiveness and vaccine safety, particularly for children. Parents stressed the need for consistent messaging from sources perceived to be trustworthy. They strongly recommended that official communications be standardised to increase acceptance and decrease confusion.

The needs of the child: Some parents recommended that the programmes be flexible and provide for the differing needs of children, such as creating different approaches depending on the age of the child, or for children with special needs.

The first factor would be age. If he was young and uncomfortable with the idea then I'd pass just so I could be there with him. If he was old enough (5th grade and higher)...I'd have him immunized at school. (P47)

Parents expressed the need to provide a safe environment for the children, and to make sure that those responsible for the programme respect a child's dignity throughout the immunisation process. This would include protecting their feelings and any potential insecurities (eg, not being forced to partially disrobe in front of classmates; ensuring privacy for children afraid of needles). A couple of parents emphasised the importance of maintaining focus on the child, by describing their own past immunisation experiences that did not do this, which they felt influenced their willingness to use an SBII programme.

I think a lot of times we don't give our kids enough dignity...When I was a kid we had these scoliosis tests done and I was a chubby kid. And, you know, we'd have to remove our shirt in front of all the other kids and... you get a lot of fun poked at you. It was very hard as a child. I think we should give them that dignity...They might be children but they're also human. (P26)

DISCUSSION

As is the case for any programme that delivers vaccines to schoolchildren, parents are key stakeholders and their perspectives and recommendations are valuable for a programme's success. In our study, parents noted several benefits of SBII, including the convenience of having their child vaccinated without disruption to the family routine and the potential for higher vaccine uptake resulting in reductions in disease transmission (thus ultimately also in reductions in burden for acute care). However, our findings suggest that for such a programme to succeed, parents must understand how it will be managed and coordinated, and perceive that they have sufficient information to make an informed and voluntary decision about their child's participation. Consistent messaging on these issues is essential.

On the basis of their concerns around school resources, it appears that some parents were not aware that Ontario's current school-based vaccination programme is actually offered and delivered by public health nurses, albeit in school. In Ontario, the school-based immunisations are given in grades 7 (Meningococcal conjugate (Men-C-ACYW) vaccine, hepatitis B vaccine) and 8 (HPV vaccine, girls only).²⁶ We note that many participants had children in kindergarten to grade 6 (K-6) and suspect that they had not yet had experience with these programmes where they might have learned this. We propose that messaging that vaccination in the school setting is a public health programme must be part of any future SBII programme, and that it might be appropriate regardless, to deliver this message to parents of children in K-6. Parental concerns about impacts of a future SBII programme might also have arisen because of a lack of experience with the current school-based vaccination programme. However, since the schools are themselves key stakeholders in an SBII programme, future research needs to address the

concerns of schools, and messaging related to any future SBII programme must make it clear that this consultation has occurred.

Our results are similar to those found elsewhere. In the USA, FGs and surveys of parents of children from all grade levels of school (elementary, middle school and high school) have found that convenience is perceived to be an advantage of delivering influenza vaccine at schools; however, concerns about vaccine effectiveness, vaccine safety, trust issues and the need for better information and effective communication have been common threads in studies of delivering influenza vaccine through schools.^{27–29} Similarly, programme coordination, implementation and management issues were issues of importance to parents, including such issues as children being immunised in the absence of a parent, worries about the impacts of peer pressure on their children and a need for reassurance that immunisation would be performed by qualified, credentialed professionals.²⁷ These concerns can be managed based on the American experience with school delivery of influenza vaccines³⁰ and Australian experience with school delivery of HPV vaccines.^{31–32} In Ontario where there is universal, publicly funded influenza immunisation, although vaccine may be provided in pharmacies and mass public health immunisation clinics, the vaccine is most frequently provided in physician offices.^{13–14} Other publicly funded vaccines recommended for school-age children are provided in schools by public health nurses as mentioned previously. As suggested elsewhere,³³ involving family physicians and other healthcare providers in presenting unified support for school delivery of influenza vaccine may help to alleviate parents' concerns with delivery of influenza vaccine in an environment outside of their medical home.

Our study had some limitations. Participants of the internet forums often provided very brief responses, with limited discussion. Future FGs using this type of format should schedule a short time period of 30 min to an hour for all participants to join the online discussion simultaneously to encourage stronger engagement and richness of response. As with all qualitative research, it is unknown whether the opinions expressed by our participants are representative of Ontario parents. Study participants were not statistically representative of the Ontario population: a higher proportion had a university degree than the population generally (67% vs 25.9%).³⁴ We sought information solely from parents; future studies should include other important stakeholders such as school board officials and health unit management and staff.

Nonetheless, the findings of this study will inform public health officials and programme managers about the potential acceptability of SBII programmes from the parental perspective. These recommendations may also be useful for evaluators of any of the currently existing immunisation programmes delivered in schools in Ontario. Future research should focus on confirming

our results through quantitative analysis, and also seek input from other stakeholders, such as public health and educators.

Collaborators PCIRN Program Delivery and Evaluation members are:

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Contributors MLR and JCK conceptualised the study, monitored data collection and drafted and revised the paper. DM developed the analysis plan, participated in the analysis, and drafted and revised the paper. DM is the guarantor. LC, JAP and SQ conducted the data collection and analysis, and drafted and revised the paper. AEW participated in the analysis and revised the paper. HR participated in the data collection. MIS contributed to the study design, specifically data acquisition. All the authors reviewed and approved the manuscript as submitted. All the authors had full access to all of the data in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

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Competing interests None.

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